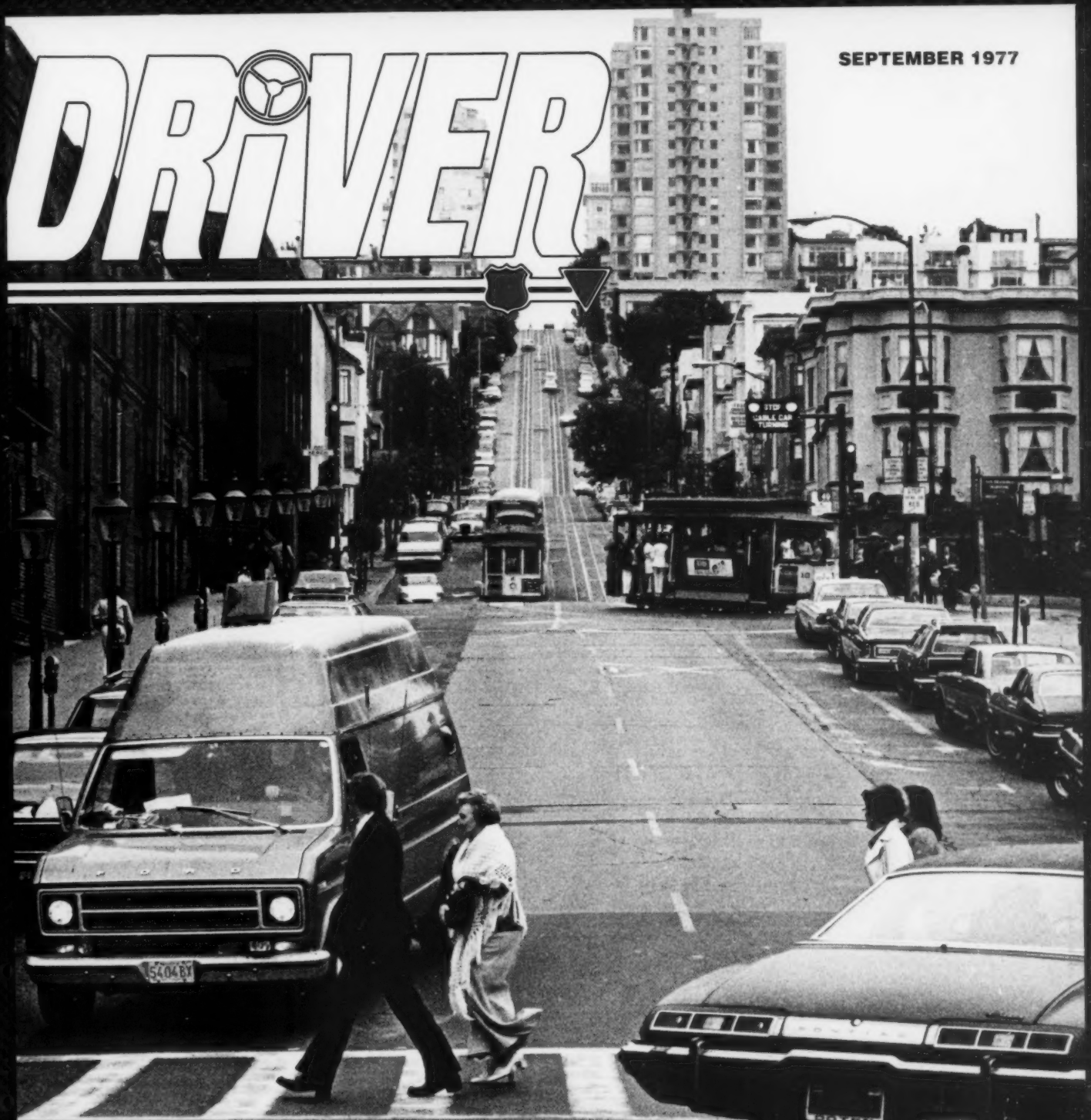
DRIVER

SEPTEMBER 1977

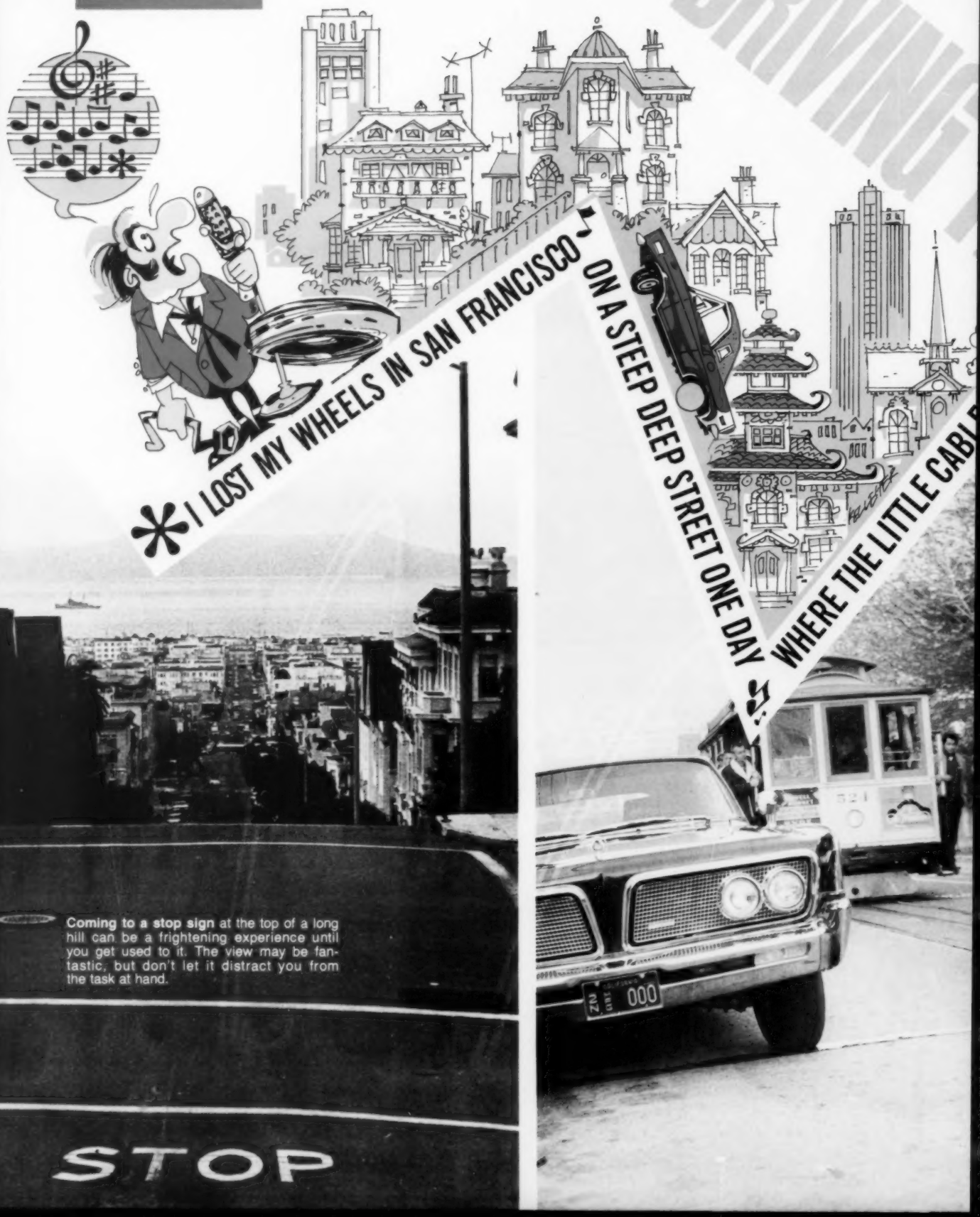


Baghdad by the Freeway

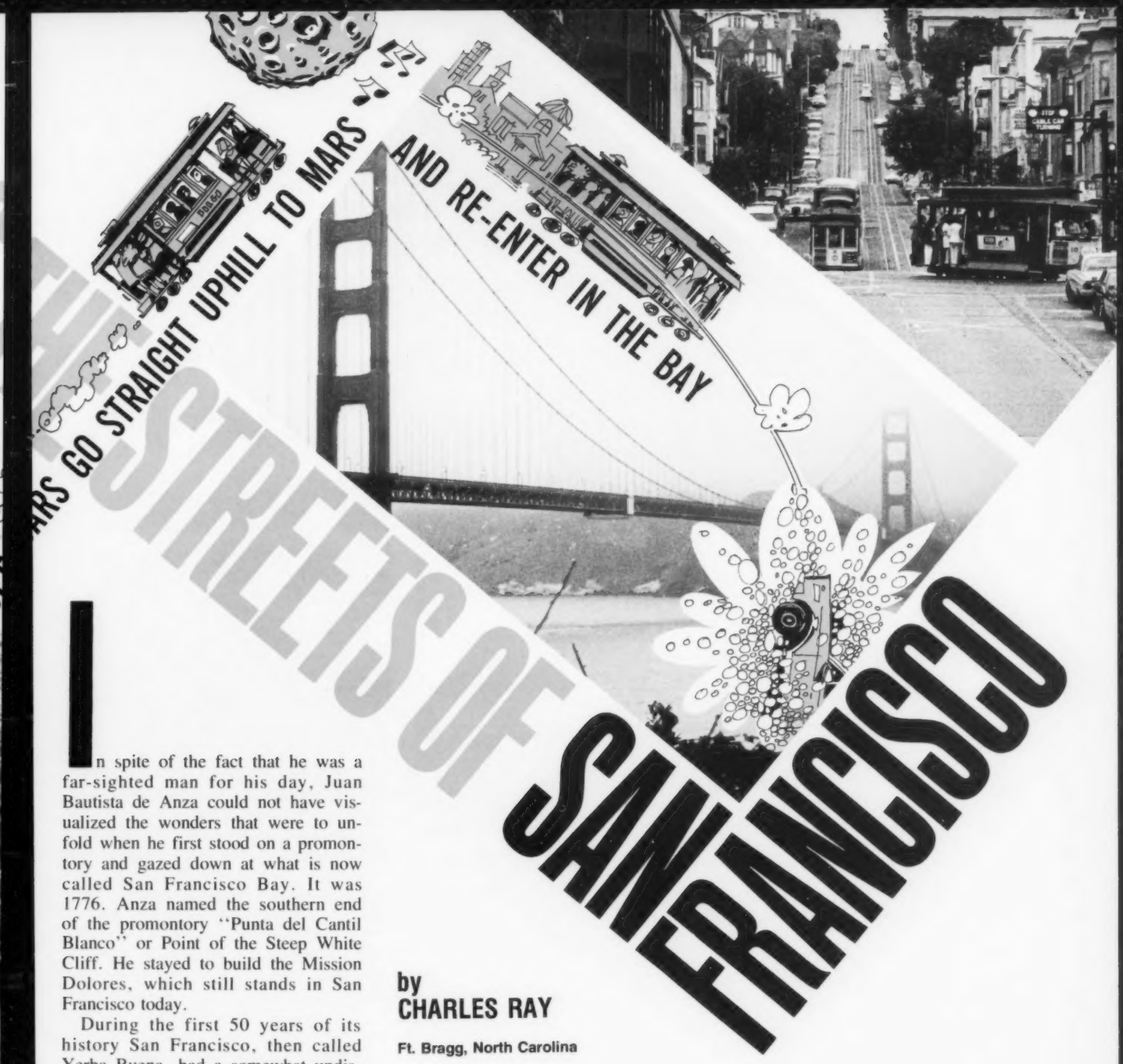
DRIVING IN SAN FRANCISCO

DRIVER

DRIVING



Coming to a stop sign at the top of a long hill can be a frightening experience until you get used to it. The view may be fantastic, but don't let it distract you from the task at hand.



THE STREETS OF SAN FRANCISCO

by
CHARLES RAY

Ft. Bragg, North Carolina

In spite of the fact that he was a far-sighted man for his day, Juan Bautista de Anza could not have visualized the wonders that were to unfold when he first stood on a promontory and gazed down at what is now called San Francisco Bay. It was 1776. Anza named the southern end of the promontory "Punta del Cantil Blanco" or Point of the Steep White Cliff. He stayed to build the Mission Dolores, which still stands in San Francisco today.

During the first 50 years of its history San Francisco, then called Yerba Buena, had a somewhat undistinguished history. The drawing card was the great inland sea known as San Francisco Bay. Its safe harbor, its bountiful sea life, and the wildlife that teemed on its shores drew the attention of British and Russian explorers. But they met resistance from the Mexicans who occupied the area.

It took the brash Americans from the young but expanding nation to the east to wrest control of San Francisco from Mexico. John Charles Fremont, an Army officer in charge of a topographical survey, moved into the settlement to provide security for Americans rebelling against the Mexican rulers. In the summer of 1846, American sailors and marines under the command of Captain John B. Montgomery landed in the settlement and raised the U.S. flag in what is now Portsmouth Plaza. The name of the settlement was changed from Yerba Buena to San Francisco.

San Francisco continued to attract a variety of people from all parts of the world, and the flow of people became a flood when gold was discovered at Sutter's Mill in 1849. This and the later discovery of silver in the Sierras made San Francisco one of the richest cities in the world.

It is known for many great achievements. One of the most notable is the Golden Gate Bridge. Designed and

continued

DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

SEPTEMBER 1977

VOLUME 11 NUMBER 4

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THE EDITOR SPEAKS

DOUBLE CLUTCH

BATTLE OVER "PASSIVES"

If you read the papers or watch the 6 o'clock news, you know the battle over automatic (passive) crash restraints in new cars is really heating up. The Department of Transportation (DOT) has told the auto makers that crash protection must be provided for front-seat occupants in 30 mph crashes on the following schedule:

Sep 1, 1981—New cars with 115-inch wheelbase or greater.
Sep 1, 1982—New cars with 101-inch wheelbase or greater.
Sep 1, 1983—All new cars.

Each manufacturer may meet the performance requirement by using any design approach it chooses. At the moment, the two obvious ways are air bags or a passive belt such as the ones used by Volkswagen in some Rabbits, which is automatically in place when the door is closed.

Some members of the House believe the DOT decision should be overturned by Congress and hearings on the matter have been set for early this month. On the other hand, many people who support the DOT ruling in general feel that DOT is remiss in not making it applicable to small—less crashworthy—cars until 1983.

If the ruling holds, top-of-the-line standard-sized cars will be affected first. It is uncertain what 1982 models will have a wheelbase of 115 inches or longer, but among today's models we are talking about cars such as the Chevrolet Monte Carlo, the Pontiac Catalina, Ford's LTD, and the Dodge Monaco.

Secretary of Transportation Brock Adams estimates that the ruling will save 9,000 lives and prevent thousands of injuries each year, once all cars are equipped with automatic restraints, if indeed they ever are.

continued

The Palace of Fine Arts is the only survivor of the 1915 Pacific International Exposition.

Seen from Fort Point, the Golden Gate Bridge is a towering colossus, stabbing into the mist blown in from the ocean.

built by Joseph Baermann Strauss in 1937, the "bridge that couldn't be built" spans the entrance to the bay. Its world famous towers reach 746 feet above the water. Almost 9,000 feet long, its six traffic lanes hang 220 feet above the waters where the Pacific Ocean enters the bay. Until New York's Verrazano Narrows Bridge was built, the Golden Gate was the world's longest single-span suspension bridge. While it may rank only number two in length, it is still number one in the hearts of travelers from around the world.

Like many large cities, San Francisco is built on a body of water, but unlike others, San Francisco is dominated by that body of water. There are few places in the city where the bay is not visible, at least from the top of a hill or the roof of a building.

The bay also controls San Francisco's weather. It acts like a natural thermostat, keeping the city cool in summer and warm in winter. The average temperature in January, the coldest month, is equal to the water temperature which is about 56° F year round. In summer, fog blankets much of the city each morning. Make sure your headlights are aligned and working properly. You'll be depending on them, even if you're not driving at night.

Driving in San Francisco can be both a treat and a frightening experience. Many cities have hills, but San Francisco's make most others seem like the proverbial mole hills. Some of the streets are so steep that as you near the top you see nothing but sky over the hood of your car. As one longtime resident of the city puts it, "Even though you drive here every day, you can still get the feeling that you're about to drive into an empty void."

Four-way stops and right on red are things to keep firmly in mind as you steer through the streets of San Francisco. Many of the four-way intersections are on hills where visibility is restricted and you must be cautious as you move into an intersection. While I have nothing to document the claim, after driving in the city for two weeks I feel that I can say with a fair degree of assurance that the "California stop" was invented in San Francisco! The sight of a car coasting through a stop sign at the top of a hill just as you've opened your eyes from the dizzying uphill drive could frighten even a kamikaze pilot.

Be sure your brakes are in good condition. Brake failure on one of those hills will age you considerably – if you're lucky.

Right on red is permitted in the city, as it is most places in the U.S. now, and the timid soul who hesitates at an intersection can earn the ire of a large number of impatient motorists in short order, especially if they are going uphill.

The San Francisco of today is as alluring to the traveler as it was in the gold rush days. The city is a curious blend of old and new existing side by side, if not exactly in harmony at least in peaceful coexistence. Next to the Golden Gate Bridge, Fisherman's Wharf is probably San Francisco's biggest attraction. East of the Municipal Pier and Maritime Museum, this area of restaurants, museums and galleries is a must on every tourist's itinerary. You can buy ashtrays made from abalone, eat lobster cooked over steam barrels, ride a cable car, or visit a wax museum. No one misses Fisherman's Wharf, or at least so it seems as the tourists throng the sidewalks and streets like lemmings herding toward the sea. The crowds make driving

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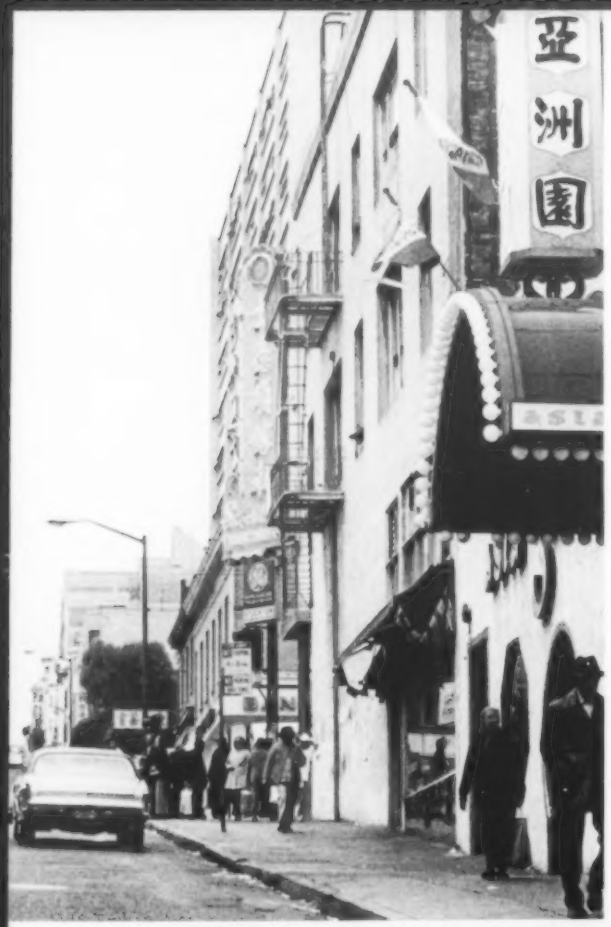
The proper technique for parking on a hill is to curb the wheels. Here the car is parked downhill, so the front wheels are turned into the curb. Rumor has it that poor parking is a quick way to get a traffic ticket in the city.



Chinatown is a meeting place for East and West.

This alley in Chinatown is considered a street and carries much traffic. Alleys will test your driving skill. The opium dens and lurid entertainment of the gold rush days may be gone, but it's still a likely place for an accident.

continued

through this area nerve-wracking. Just park and do what most residents of the city like to do – walk.

The Chinese were first attracted to California in the gold rush years and were later invited in large numbers to provide labor for the construction of the western half of the transcontinental railroad. They clustered in a decrepit section west of the Barbary Coast. In this area some 30,000 people lived in unbelievable squalor. Here the tenements were more crowded than any others in the U.S., although certainly more colorful. The population of Chinatown has grown but living conditions have improved immeasurably since the 1800s, and it is still one of San Francisco's most colorful sections. The many Chinese signs and quaint oriental shops give one the impression he has driven into another world. The alleys of the old days are just as narrow and winding as ever and extremely difficult to navigate. If you drive a full-size car, take care.

The Barbary Coast no longer exists in the form that made it famous during the early days of the city. You can go to sleep there and not worry about waking up on a freighter bound for Shanghai! But it does retain a bit of the old excitement and is worth a look.

San Francisco is famous for its quaint streetcars. They are an impractical and crowded mode of transportation, but San Franciscans and tourists alike love them. Having defied economics, they still make their way about certain sections of the city. The most interesting ride is the one that plummets down the steep slope of Hyde Street and terminates near Fisherman's Wharf. When sharing the street with a cable car, remember not to treat it like a bus. Give the trolley plenty of room because it is bound by the tracks, and don't pass it on the right.

By 1911, San Francisco had recovered so completely from the 1906 earthquake and fire that Congress approved it as the site of the world's fair to commemorate the opening of the Panama Canal. The Pacific International Exposition was held in 1915 on the site that is now the Marina District. After the fair the exhibits and pavillions were razed and block after block of apartment houses were constructed on the site. The only survivor of the fair is the ornate Palace of Fine Arts which is located between Bay and Chestnut, and is a favorite spot for many San Franciscans.

Next door to the Palace of Fine Arts is the Presidio of San Francisco. The home of Sixth Army headquarters, it has guarded the entrance to the bay since the birth of the nation. The Officers Open Mess in one of the oldest buildings on the post and is a remnant of the Spanish era. The restored garrison at Fort Point and the skeleton-like concrete structures on the hillside above Bakers Beach are also remnants of a bygone era, before ICBMs and radar made the big coastal defense guns obsolete. Many areas of the post are allowed to remain in their natural state, and abundant plant growth makes driving through a pleasant experience. Part of San Francisco's 49-mile scenic drive winds leisurely through Presidio, entering through the main gate on Lombard Street and finally exiting on El Camino del Mar in an area where stately residences overlook the sea.

Coming down from El Camino del Mar, past the Palace of the Legion of Honor and through Lincoln Park, you come to the beach. While the water temperature and the undertow make swimming impractical, it is a favorite spot for the tireless surf casters who are as much a part of San Francisco's scenery as the sea gulls. South of the point where Golden Gate Park meets the beach, hang gliders use the cliffs overlooking the white-capped Pacific surf as takeoff points for their soaring. It's not uncommon to see several gliders in the air at one time, sweeping over the ocean like great multicolored gulls.

Like many other charming or spectacular views in this splendid city, the hang gliders can grab your attention away from the traffic. Inattention is one of the most common driving errors so take my advice – stop and park rather than trying to keep one eye on the street and the other on the sights.

A spot often overlooked by visitors to San Francisco is Japantown which is east of Van Ness Avenue between Geary and Bush Streets. Not as color-

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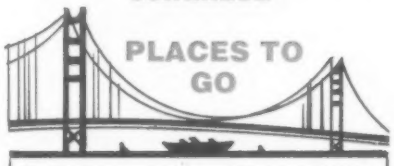


PLACES TO GO AND THINGS TO DO

Chinatown Wax Museum — At Grant and California Streets. Wax exhibits showing 4,000 years of Chinese history.

Sacramento Street—San Francisco's most distinctive shopping district, its 55 unique shops, galleries and restaurants are located among 100-year-old restored Victorian mansions.

Ding How Tours—See Chinatown at night with personal Chinese tour guides.

Old San Francisco—Next to The Wax Museum at Fisherman's Wharf. Ride back through time in a mini cable car to see San Francisco's history from the gold rush days to the present.

Presidio Ecology Trail—A two-mile loop that begins and ends at the Presidio Army Museum. A nice afternoon nature walk where the many types of vegetation on the Presidio can be seen and enjoyed.

49-Mile Drive—Although this scenic tour of San Francisco's historical and interesting features starts at the Ferry Building on Market Street, it can be entered anywhere along the route and return you to your starting point. It is plainly marked with a large blue-and-white seagull sign along the route.

(left)
Entering San Francisco from Oakland. It's sunny here but up ahead is that ever-present fog.

driving the streets of san francisco

continued

ful as Chinatown, it nevertheless is a pocket of interesting culture in one of America's most unusual cities. Here you can sample authentic Japanese and Korean cuisine, buy artifacts from the Far East, and hear the musical languages of the mysterious east spoken by many people only recently arrived on these shores.

Not far from Japantown is the famous (or infamous) Haight-Asbury intersection. With the decline of hippie cults, it is beginning to take on an aura of respectability. It still offers hangouts for the few remaining "street people," but most of the bearded and beaded musicians and poets have set up shop in other bay areas. Some still can be seen at curio stands or performing in Ghiradelli Square for the tourists.

While it might not be necessary to wear flowers in your hair if you're going to San Francisco, if you go in the summertime, be sure to take a warm sweater or jacket. And be prepared for the fog.

With the end of spring, cool ocean breezes pour in through the Golden Gate and the fog covers the bay and the city in the mornings like a fluffy white blanket. The bridge towers, skyscrapers and tall hills seen from the air rise up out of the fog like an oriental landscape painting. An assortment of foghorns, sirens and whistles create a symphony that is reminiscent of an Alfred Hitchcock movie. While it's beautiful to look at, until it burns off about midafternoon, fog makes driving tricky. It's a shock to the system to cross the Golden Gate Bridge in fog so heavy that you can barely see the car in front of you and then as you leave the north ramp find yourself in brilliant sunshine. The sight from the hills over Sausalito makes it a worthwhile trip though.

A word of warning about returning to San Francisco from the north on weekends. The Golden Gate Bridge (and the Bay Bridge) are one-way toll bridges. You pay upon entering the city rather than when leaving. On Sunday afternoons from about two until late into the night the southbound lanes

If you don't believe people use public transportation, wait until you see a cable car in the rush hour. Hanging on the outside is acceptable.

SAFETY TIPS FOR SAN FRANCISCO DRIVING

1. **Be sure your brakes** and tires are in good condition. Failure of either on one of San Francisco's hills could age you considerably—if you're lucky.

2. **Watch out** at four-way stops for the driver who fails to yield the right-of-way. This is especially critical at blind intersections caused by foliage, stone walls, buildings or hills.

3. **Make sure** your lights are aligned and working properly, especially in the summertime when fog blankets much of the city in the mornings.

4. **If you get** temporarily disoriented while driving, don't try to circle the block. The network of one-way streets and streets that are interrupted by hills and parks can cause you to become totally lost. This isn't dangerous, but it's a headache when it happens. Get a good city map before you get started.

5. **Don't forget** to curb your wheels when you park. Runaways are a big danger to everyone.

of the Golden Gate Bridge resemble a mile-and-a-half-long parking lot. In fact, traffic moves faster in some parking lots. An accident ahead of you once you get on the bridge can leave you stranded for hours.

San Francisco is a city with a style all of its own. It demands very little from you while giving hours and days of unforgettable memories. It's an amalgam of cultures and modes of living that might have been conceived in the script of a Woody Allen movie. The most divergent philosophies and lifestyles live side by side in apparent harmony, not combining, but at the same time not openly in conflict. It has been said that any life style can find a home in San Francisco. After a visit to the city you'll agree. There is only one thing that San Franciscans are stubborn about: Never call their city "Frisco"!

. . . **Drivers** must give the trolley plenty of room. At the end of the line, it makes a full-circle turn in order to retrace its path.

RADAR Can Getcha'!

by
MICHAEL T. KEEFE

The energy crisis—coupled with the fact that slower speeds save lives—has prompted traffic police to emphasize enforcement of speed laws. Radar is being used more every day by officers throughout the country.

Traffic radar is not new, but the improvements that have taken place since it first appeared in crude form in 1945 are remarkable. Technical advances have made radar units very accurate, incredibly fast, and versatile.

Radio Detecting And Ranging (radar) was first developed by the Armed Forces to supplement their optical range finders for gunnery. Since then it has evolved to the point that today it affects all our daily lives, from control of the aircraft in our skies to the cars on our highways.

Radar works because radio waves can be reflected by a solid object, much like sound waves, and produce an echo. A radar unit combines both a transmitter and receiver. The transmitter sends out a signal with known characteristics and electronically compares it with the return signal it receives. This translation or comparison is made by means of a phenomenon known as the Doppler effect.

The physics principle of this effect states that a wave frequency will increase or decrease in direct proportion to the distance from the receiver. This is true with sound as well as radio waves. These wave frequencies are translated to a number and, in the case of traffic radar, identify your speed. This frequency can best be compared to the sound of an approaching car or motorcycle which gets louder as it nears you and diminishes as it goes away. This sound, or frequency of sound, tells your speed both coming or going.

Most of the radar units in use today double-check their readings in milliseconds. Internal circuitry checks and rechecks the input many times before the display shows on the screen, and had the internal doublechecks not agreed they would have refused to display the speed. Units made by different manufacturers vary in size, shape, and additional functions, such as sound coupled with speed readouts, but all have one thing in common and that is they are Doppler-type radar units.

There are two accuracy checks used with modern radar, one or both being used by the officer operating the radar each time he sets up his radar unit for use. The first is a special tuning fork that will produce an artificial speed signal of known and preset frequency when struck on a nonmetalic surface. This frequency, expressed in MPH, is stamped on the fork. When the fork is struck and held in front of the radar antenna that speed must show in the readout window. If it does not, the unit is malfunctioning and cannot be used.

The other test is a built-in circuit function which is supposed to be used whenever the radar unit is set up in a new location. The officer has a calibration button or switch he activates to put the calibrated value on the screen. These checks are supposed to ascertain that the radar unit is working properly. Manufacturers are particularly emphatic on these points of calibration because malfunction is one of the few grounds on which speeding citations can be challenged in court.

Radar use has been challenged in the courts of all 50 states. As a result, case law on the subject abounds. The first landmark case was New Jersey vs Dantonio in 1955, which established the admissibility of radar.

Other case laws have also established these points: 1. A properly constructed and operated Doppler radar device is capable of accurately measuring the speed of an automobile. 2. The tuning fork test is a reliable method of determining accuracy. 3. An operator is considered sufficiently qualified to operate the set when he has had the training to set up, calibrate, and read the instrument. 4. The operator is not required to understand the scientific principles of radar or be able to explain its internal workings. 5. The officer's estimate of excessive speed, from visual observation, when confirmed by the reading of the radar and when the speeding vehicle is OUT FRONT, BY ITSELF, NEAREST THE RADAR UNIT, is sufficient to identify the vehicle if the officer's visual observations support the radar evidence.

With case law so well-established and acceptance of radar evidence so universal in the courts, a defendant's only hope is that the officer makes a mistake on the citation or faults his testimony in some way. (The safer way is to obey the speed laws in the first place.)

Radar is here to stay, so our only alternative is to live with it. When a speeding driver gets caught the experience is usually sufficient to make him change his driving habits. It's that small minority of individuals though, that continually flout the laws of society and endanger all of us, that radar is helping to identify.

If you are a driver who likes to see what you can get away with, there are numerous types of radar detectors on the market. But hold it! Before you decide to run out and buy one, read on. Some states have outlawed their use while others are citing windshield obstruction laws as a reason to restrict the use of detectors.

The Los Angeles County Sheriffs' Department recently conducted tests with three of the radar detection units currently on the market and came up with some interesting findings.

The manufacturers of the radar detection units all claim that their units will detect radar beyond its accurate, readable range and give a warning. Is this true and do they work? Answers are mixed, but the Los Angeles County Sheriff's testing group found that none of the speeders in urban or suburban areas could get away with much. On the other hand, on an open, straight highway the detectors will detect traffic radar beyond the point of accurate reading by the radar operator in a

continued

(left)
"Speed checked by Radar." When you see this, remember it means what it says, so it's in your own best interests to slow down and observe the posted limits.

(right)
A. The radar unit is set up and aimed. **B.** The radar is checked for calibration. **C.** The radar is in operation; notice it is not as visible as the speed limit signs.

Small, hand-held units such as this Security Policeman is operating can be used almost anywhere. The only requirement is a power source, such as a cigarette lighter receptacle in any car or on a motorcycle, or even just a battery for complete mobility.

radar can getcha'!

continued

The tuning fork for checking the calibration of the radar unit is stamped with a speed in MPH. The tuning fork should make the unit read out this MPH figure when it is struck on a non-metallic object and held in front of the radar.

straight-line rural highway or freeway situation. In this situation there is sufficient warning for a driver to reduce speed significantly and so avoid a citation.

How significant the difference in MPH would be was not specified but it is a good guess that a flagrant violator still couldn't slow down enough not to be identified. Another point gathered from these tests was that since the law enforcement officers know in what kind of terrain conditions the dectors *cannot* pick up the radar in time, they would set up their radar surveillance in such locations.

The final decision to reduce your speed is up to you. The increased use of radar detection should be an incentive to do this. Ninety-seven per cent of all accidents are the result of driver error. Speed and lack of attention are the common denominators.

Fifteen per cent of the drivers are making the errors that endanger everyone else. The purpose of radar, or any other speed detection, is not simply to enable the police to issue citations. Traffic enforcement has just one purpose: to discourage "driving errors" and so prevent accidents.

An unhappy driver awaits his speeding citation after meeting up with an officer with a radar unit. This particular traffic stop netted the driver a citation for his speeding. But an off-duty officer who had been following this individual for about 10 miles on the freeway stopped and mentioned the numerous traffic violations the driver had committed prior to encountering the Radar Officer. This is a good example of the purpose of using radar —it identifies flagrant violators.

THE JOGGERS

You're the driver. It's Sunday morning on a quiet, two-lane residential street. What aspects of this traffic scene are most significant to you? The van coming over the center line? The bicyclists in front of you? Will you even notice the jogger?

by Maj PHILIP D. WILDER
Defense Mapping Agency

Visit Washington, D.C. for the first time in years, and what grabs your attention first? Maybe the Kennedy Center or Mrs. Johnson's wonderful flower gardens along the Potomac. But more than likely the first thing to strike you will be all those joggers – heads back, knees high, loping past the Lincoln Memorial and down the Mall, skimming around the Tidal Basin. Rain or shine, there they are, flying along in pursuit of physical fitness.

The nice thing about D.C. is that there are at least some places for joggers to run other than a track where they aren't endangered by traffic. Not so in most American cities. The jogger has to take his chances along the side of the road, maybe only inches from passing cars.

The world belongs to people, not machines. But people have to get along with machines. Joggers have to get along with drivers, and there's the rub. Unless the driver has concern for the runner, our athletic friends are in danger of worse than a Charley horse.

Here are some points to think about. Joggers first:

1. There is only one way to run and that's *facing* traffic.
2. Traffic signals and signs apply to you as well as to cars.
3. Don't pick a course or a time of day that automatically puts you in conflict with heavy traffic.
4. Don't over-extend yourself by running to the point of exhaustion. When you're tired, you're no longer alert to the traffic!
5. Watch drivers, not vehicles. See that the driver knows you're there and indicates an understanding of what each of you is doing.
6. Be aware of the major threats to your safety: Drivers from crossways, drivers turning left into you, and drunk drivers.
7. Admit to yourself that any argument about right-of-way between jogger and automobile will always be won by the automobile. Your role will be better understood if you remember what it is like to be a driver.
8. Wear light-colored clothing (for visibility), take a reasonable position on the side of the road without darting or weaving about, and be heads-up and alert to improve your impression upon the driver.

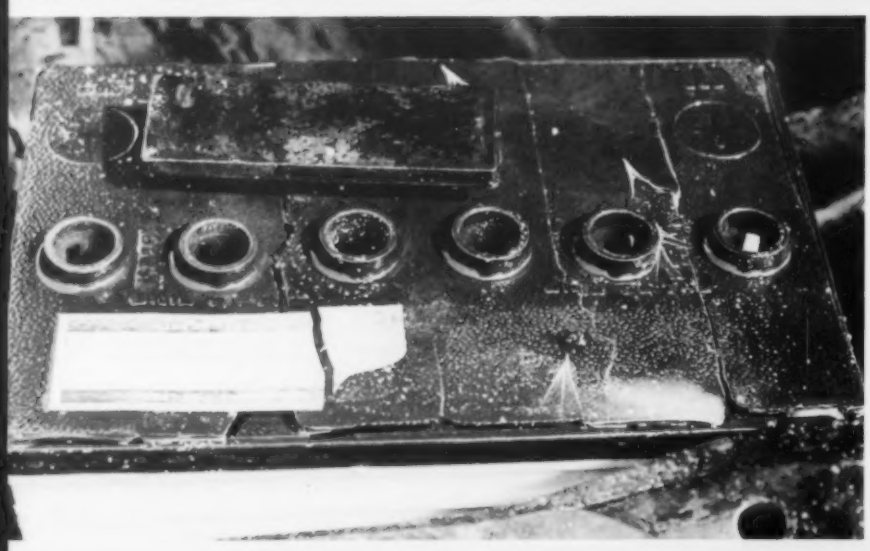
Drivers:

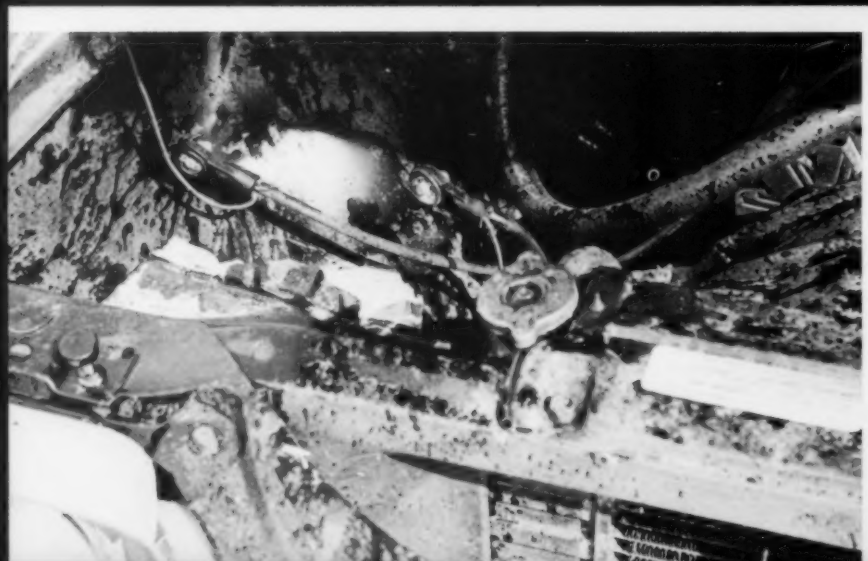
1. Try to have empathy for the runner. That means thinking about how tough it is out there.
2. Give a fair share of room to the runner but don't cross over the middle line of the road to pass him.
3. Don't throw beer cans and other objects or let your passengers do so – they hurt! (Yes, it happens.)
4. When it's a simple choice of waiting a second or pulling out or turning in front of the runner, try giving the break to the runner. You gain because he will be where you can see him.
5. Learn to check the opposite direction from where you are turning. Failure to check both directions is a bad habit on all accounts, but particularly dangerous to pedestrians.
6. Yes, runners do have a right to be out running. No, if you were to run more than three miles on a track you wouldn't want to train there either. Don't project your feelings about physical conditioning onto the runner. Lots of people hate exercise, but that doesn't mean they should hate the exerciser.

Both runners and drivers need to remember that their roles can be interchangeable. Respect, even a degree of fear, won't hurt a thing.

COLD WEATHER AND BATTERIES

by
MSgt Clarence O. Faile
Scott AFB, Illinois





Some parts of your car need more attention in winter than at any other time of the year. Take the battery, for instance. The car gets to the point where it just doesn't want to crank up on cold mornings, and finally one day you grind and grind away until the battery is dead. Do you know you now have a potential explosion on your hands?

When a battery is put under a heavy load, it generates hydrogen, an explosive gas. If you attempt to start the car with jumper cables, the accumulated gas can be ignited by a spark from the cables, and that's it – a violent explosion. Just how violent is shown in these photographs. The person who was trying to start this car suffered disabling injuries.

Here is the usual best procedure for jump-starting a car: Clamp the first jumper cable to the power pole (positive) of the dead battery, and the other end to the power pole (positive) of the good battery. Next, clamp one end of the other jumper cable to the negative terminal of the good battery. The last end is hooked to a good grounding point, preferably to the car frame farthest from the battery on the dead car. Disconnect in reverse order.

Some cars with positive grounds, alternators, and special ignition systems may require different hook-up procedures. Check the owner's manual or other technical authority if you have the slightest doubt.

Remember that it is *always* necessary to avoid sparks around batteries. This means you should never smoke when you're working under the hood. Be careful about jewelry, too. Watches, rings, bracelets and necklaces can come in contact with the battery terminals, shorting them out and causing burns to your skin. If hydrogen gas has accumulated, even this small spark could cause the battery to explode.

While you're thinking about batteries, here's another thing to remember. Don't let your battery bounce around or vibrate. Be sure it's secured firmly to its mounting table. A vibrating battery loosens materials inside it. These materials pile up in the bottom of the plates, causing a short circuit and killing one of the cells.

A 6-volt battery has three cells and a 12-volt has six. When one of the cells is dead, the 6-volt battery becomes a 4-volt and a 12-volt becomes a 10-volt. The shorted cell drains the energy from the other cells, soon killing the entire battery.

New battery hold-downs can be purchased in almost any automotive supply shop.

"ICYCLE" RACING

by JOYCE O'KELLEY

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The Club: Establish
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SFC Larry Perriman, now
and interested member, explai
fore I purchased my first mo
last year, I had a preconceived
of cycle riders. I would see them
down the road, weaving in and

DARING, SKILL

If riding a motorcycle in the dirt sounds difficult, try to imagine riding a cycle on the ice. And if that brings an idiotic smile to your face, imagine motorcycle ice races!

Insanity! A slap-stick sliding comedy!

That's the exact reaction of many people who heard the Fort Devens Riders were planning such an undertaking. The Fort Devens Riders, military and dependent motorcyclists sponsored by Recreation Services on Fort Devens, Mass., were chided loud and long – until the day of the big event.

"Icycle" race day, as it was dubbed by non-riders, dawned bitter cold – on spectators and contestants, but for the frozen pond. Even with y winds, approximately 80 people the snow-covered roads to the area to reach Clear Pond. They expecting a show. And they but, not exactly what they an-

of slipping and sliding across e cycles were handled with daring. Seventy-five riders, ages from five to 62 years, they thrilled and awed d crowd. Although they rk, prepared for amuse- the day ended a mighty d left the area.

read quickly and on the the event a group of ered, this time with a cycle riders, to witness sport of all – motor-

shing a motorcycle wasn't the easiest the Fort Devens had to concen- image of cycle clists who had motorcycles as transportation ne associated The idea of ts of the old cle, sinew, eer.

an active ins, "Be- otorcycle d notion m riding out of

traffic, and I immediately classified them as bad guys. I was hesitant about joining the club but finally attended a couple of meetings, started riding in the dirt with them. They began to impress me as down-to-earth people. Since I joined the club I've discovered every cycle rider I meet will go out of his way to do anything for you. My opinion of cyclists has reversed itself 100%. Sure there are some 'wackys' too, but these are the exception, not the rule."

Perriman wasn't the only one to change his mind about the riders. After the club formed in July '76 and the Post had a chance to see the interaction of club members, attend the races, witness the careful planning of safe events, and meet the members as individuals, many people had a totally different viewpoint. They discovered the bad guys were their neighbors and co-workers. Members, both officers and enlisted personnel, came from all units assigned to Fort Devens: 10th

continued

Special Forces Group, the Army Intelligence School, 39th Engineer Battalion, the Medical Battalion, and included entire families – men, women, and children.

Special activities such as a rodeo held last year, with fun events to test the skills of small children, helped the club's image a great deal. Because the children enjoyed the sport, many parents were drawn into the club – and most eventually became hooked on cycle riding as well.

At first merely a private club, allowed to meet on the post, with an undeserved "bad" reputation, the group finally attracted the attention of Recreation Services and paper work was initiated to provide them with sponsorship. Cooperation from that point on has been tremendous. The Post gave them a large, old barracks building, which meant they no longer had to pay rent and utilities, and they were included in Recreation Services' annual budget. But best of all, the group gained the recognition and respect they deserved. C. "Dutch" Koehler, Chief of Recreation Services, is very enthusiastic over the success of the group.

The group organized into two sections: street activities and dirt activities. Elections were held to name a chairman for each section to sit on the Recreation Services Board. The Fort Devens Riders have no president or other formal positions, and the two chairmen oversee the activities. If a special activity (such as the ice races) is to be planned, a chairman is appointed or a member volunteers to organize the event.

The idea to hold the ice races on Fort Devens developed as a result of the attitude of many of the civilian communities to the sport. Most of the available ponds and lakes are surrounded by private homes and the residents object to the noise. Each year more and more ponds are closed to the cycle riders and it is expected that in New England communities ice racing will eventually be banned.

The Nashoba Valley Riders, a civilian club, has staged several ice races during the past five years, but this year could not find an ideal site. They approached the Fort Devens Riders to co-sponsor the event. The Nashoba club would provide the expertise if the Fort Devens Riders could handle the concession and get the Post to agree to let them use one of the many ponds. Although a spectator fee was not to be charged, the group decided to request a donation, the money to be used to cover the overhead and then a 50/50 split of the profit. In addition to the fun, this was the incentive needed by the Fort Devens Riders. Money was needed to build up a "kitty" with hopes of buying tools, testing equipment, repair equipment, and funds to provide for special field days for motorcyclists.

SFC Perriman was appointed chairman of the event, and Recreation Services backed the club all the way with a pond, equipment, publicity, and moral support!

The sport of ice racing on motorcycles is not new, but ice racing on a military installation is. In Europe it is a common practice but a dangerous one. According to Perriman, Europeans race with three-inch spikes in the tires, and inflate the tires up to about 50 pounds of pressure so the spikes are immovable. This helps them maintain the same speed they could obtain on flat tracks.

Safety first, rather than speed, is the main concern of the Fort Devens Riders, and spikes are outlawed. Instead, screws are placed into the knobs of the tires, with the head protruding no more than 3/16 of an inch. This allows good traction and provides maximum speed in the straight-away of about 45 miles per hour. Corners are taken as slow as five miles per hour.

A few riders do race without studs, and for them a special class is arranged. It is extremely slippery and difficult, and those competing are usually not

serious competitors but out to have a good time. The most serious of the unstudded racers are the trials riders. These are skillful riders. The nature of the sport requires a tremendous degree of agility and balance.

Boots of some type are mandatory for the racers, as well as eye protection and helmets. Most riders wear leather padding and kidney belts to absorb the shock.

Keeping the cycle up on the ice is not difficult – no more so than any other type of terrain. It's just a matter of acquiring new skills. Ice racing is actually considered safer than dirt riding. If a rider falls in the dirt, the least he can expect is torn clothing – and he might end up with ripped skin and maybe a few broken bones as well. Hitting the ice produces the initial impact, but from that point on it's smooth sailing! All you do is slide across the ice.

What could possibly induce a person to attempt to take a trip across an icy pond for the first time? Perriman says, "It's difficult to explain. If you're involved with motorcycles, any new challenge is really what it's all about. Ice racing is an entirely different world. Once you're on that cycle, out on the ice – there is nothing like it in the world! Absolutely nothing!

The ice races are not necessarily a male sport. Several women were also entered in the Devens events, and one delighted young miss beat her father in the finals for a first-place trophy.

To date, the Fort Devens Riders have experienced no injuries or accidents. People do go down, but each rider is keenly aware of the hazards. If someone falls, the approaching riders will go out of their way to avoid crashes.

Concern and skill of the riders is only part of the reason for Devens' accident-free races. The races were handled extremely well by the officials on the track, and the flagmen did an outstanding job in averting collisions. One of the first safety precautions taken by the Fort Devens Riders is to assure that new riders know how to fall to minimize the chance of injury. (This is common training in many cycle clubs.)

Kids Too: Children are also indoctrinated in safety measures. Perriman says, "The five-year-olds who enter the races are competitors in every inch of their heart. They do realize the danger, and they know exactly what will happen if they fall down. During our last ice race one five-year-old boy took a tumble. You could see he wanted to cry, but he got up, started off again, and took himself straight to the pits. He was obviously shaken, but he wasn't about to let the crowd see him cry. He understood falling is part of the sport. And he accepted it. Kids are great!"

Clubs who would like to plan an ice race can prepare for a lot of man/woman hours for their first endeavor, according to Perriman. "It must be well organized. We did a lot of painstaking planning. We worked for two months just doing leg work for the one event, sometimes up to four hours a day. But we learned a lot, and each time it gets easier. We know what our errors were, and time can be saved by knowing what we did wrong. By having the plan outlines, we'll still have a lot of work, but we won't be wasting time performing unnecessary steps."

Other clubs can profit by the Fort Devens Riders' experience. The first consideration is, of course, a lake or pond. Preferably it should be out of sight and sound of any dwelling, large enough to accommodate spectators, have a sufficient parking area, and a good viewing area.

Size of the pond is an important factor. The Fort Devens Riders used every available surface of Clear Pond, except for a 10-yard area along the shore. From one end to the other the pond is approximately 300 feet.

Once the site is selected, approval to use the site must be obtained, and then it's a matter of waiting for the ice to freeze. But this isn't the time to sit back and relax. While the pond is freezing, the members anticipate the projected date of the event and the number of riders who will enter, then purchase a sufficient number of trophies. For a two-day event, the Fort Devens Riders spent $400 on trophies alone.

Feeding the contestants and spectators is also taken into consideration. After estimating the number of people who would attend, food and beverages were purchased at about $500 for the two days. Recreation Services provided camping trailers to use as kitchen facilities, and portable latrines for the comfort of the crowd.

Preparing the Ice: Preparation of the pond is important, and combating the "elements" proved to be a real chore. Each time it snowed, the lake had to be plowed to keep the snow from insulating the ice and causing melting. It wasn't just a matter of plowing the snow off the pond but knowing where to shift it to keep from causing stress,

continued

TEAM
30

buckling, or other safety hazards. The Post supplied the equipment to keep the pond plowed.

The Post Safety Officer, through weight tables supplied by the Post Engineers, determined that 12 inches of ice would sustain more than enough poundage, and one of the last steps before the actual race was an ice check. Danger areas of the pond were roped off (such as where the water flowed under a bridge).

In determining the track layout, Perriman explains, "The track on the straightaway is 200 feet along both sides, with 50 feet corners. We stood at the 250-foot line and drew a rope around to make a perfect turn. There was about 100 feet distance between the straightaways, so we're talking about a 900-foot track."

Spectator parking and contestant parking were segregated, and spectators were not allowed on the pond, but only in the viewing area on the shore. Fort Devens Riders manned the ticket booth, registration, served as parking attendents, cycle inspectors, worked in food concession, and assisted in manicuring the pond. The Nashoba Valley Riders provided the racing officials.

Registration: On the morning of the race, registration began at 9 a.m. Bikes were registered by cubic centimeters, and classes divided solely on this basis. Age was not a factor in the classes. Children were eligible to enter any class of bike they could ride – as were the old timers. The registration fee was set at $3 based on the expected overhead, and a member's van served as the registration booth. Since spectator fees were not charged, a 50¢ donation was suggested, and most willingly paid the small amount. Contestants had to first sign a waiver releasing Recreation Services and the military from any responsibility in case of accidents, and parents were required to sign for contestants under 17.

Following registration, the bikes were inspected. Sheetmetal screws and studs could only be mounted from the outside, and kickstands had to either be removed or wired to the frame. (A kickstand could be a real hazard if it came down and caught in the ice.) Headlights were taped to prevent breakage of glass.

At 10 a.m. practice heats began. All racing officials were in their designated places as a safety precaution, but qualifying points were not awarded or assessed. Only a small number of cycles were allowed to practice at any one time.

After all bikers had received an opportunity to practice, the track again had to be manicured by snow plows to remove the chopped ice. During the actual race, if ruts developed, a large grate weighing about 800 pounds was attached to the rear of a jeep and dragged along the track to make it level again.

Necessary officials were: Two people at the starting line to line up motorcycles; one referee to assure everything was proceeding properly; a starter responsible for starting and terminating the race; four flagmen (one at each corner); a flagman at the exit gate; and four to five scorers to keep track of the bikes each time they completed a circle (which was recorded on score sheets).

Continuous Races: The scheduling was arranged so that continuous races were held for over four solid hours. The flagman started the first class from the starting line, and the next heat immediately began lining up. When the checkered flag was given for the race in session to end, the moment the last bike was off the ice, the flagman started the next class.

Flagmen were responsible in the event of an accident or breakdown on the ice to signal the on-coming riders to go to the outside or inside of the track. This way the race could continue, and would only be halted in the event of a pile-up.

Judging was based on speed, in a round-about-way. Four qualifying heats were done on motocross scoring. The first rider to cross the finish line after eight laps in each heat got one point, the second rider two points, and so on. At the end of the fourth qualifying heat, the ones with the fewest points competed in a final heat to determine the trophy winners. The trophy heat was based on scramble scoring – first man to get the checkered flag won first place, second received second place, etc.

If the race is to be held on two consecutive days (such as the event held at Fort Devens), following the final race of the day a plow is necessary to prepare the track for the second day of racing.

Following the second day, huge ruts as large as six inches will be found throughout the track area. The ice is chewed up by the cycles. If a race is planned for the next weekend, additional work is required. The Fort Devens Riders did have a race the following week. To prepare the track, holes were cut in the ice all over the pond and pumps used to cause the water to flood upward. An estimated 40,000 gallons of pond water was placed on top of the ice in this manner. When freezing occurred, the pond was again nice and smooth for the big weekend.

As Perriman explained, an ice race is a lot of work! Having an experienced club like the Nashoba Valley Riders was invaluable. But if the experience is not available, an ice race can still be planned. If a club is keenly interested, it is not an insurmountable task. With the complete backing of Recreation Services, the cooperation of the Post, and the willingness of all members from the youngest to the oldest to become actively involved, a club can easily "slip" right into "icycle" racing!

THE SAFEST WAY TO

AN EXAMINATION OF EMERGENCY BRAKING TECHNIQUES

If you'll pardon a preliminary bit of facetiousness, there are many ways of totally avoiding accidents with your motorcycle. You can leave it in the garage, ride it only when there is no traffic – or you can move to a less populated area . . . for instance the top of Devil's Tower, Wyoming. The point is that it doesn't take the average rider long to realize that this particular mode of transportation has some built-in hazards. But you bought that two-wheeled beauty to ride, and by golly, that's what you're going to do!

Most riders who have "survived" for any length of time on a motorcycle have developed their own particular brand of motorcycle safety techniques – many of which are darned good. However, it requires only a bit of inquiry to discover that some commonly-held concepts about motorcycle riding are based on misleading information. With that in mind, let's look at braking as a factor in avoiding impending crashes safely and see if we can alter some thinking.

Stripped to the barest essentials, there are really only two methods of avoiding a potential impact situation:

1. Maneuvering safely out of harm's way.
2. Stopping prior to impact.

The first method comes under control movements and as such will be included in a later discussion on motorcycle control. Let it suffice for this paper to acknowledge that *whenever possible* the best and safest way to avoid an impact situation is to maneuver around it or away from it.

But what if this is impossible?

Popular notions include two alternatives when maneuverability is eliminated as an option: laying the motorcycle down, and emergency braking.

"Laying it down" is one of the most persistent myths in motorcycling. I have often heard it said that there are two kinds of motorcycle riders: riders who have laid their motorcycle down and those that haven't. Maybe this is true. A two-wheeled vehicle certainly can be "laid down" easily enough. However, it seems to me that there are at least two separate categories here: one in which the act is done deliberately, and one in which it is not. Let's examine some of the ideas surrounding the deliberate act of laying a motorcycle down and leave the accidental lay down for another time.

Okay then! *Why* would you lay your motorcycle down? One hypothetical situation could be: "There I was tooling down this residential street doing about 35 miles per hour and some joker ran his stop sign at the intersection we were both approaching. What was I to do? I had to lay it down!" How about this one? "This fellow made a left-hand turn right in front of me. I don't think he even saw me. I had to lay it down, I was doing 40 miles per hour and I certainly couldn't have stopped!" Here's another, "I was going down this street, the traffic was pretty heavy in both directions. A dog ran out in front of the guy in front of me and he slammed on his brakes, coming to a complete stop. I couldn't avoid him to the left because of oncoming traffic

CRASH... DON'T

by ROBERT NICHOLS

Bob Nichols is no stranger to the pages of *Road Rider*, from which this article is reprinted with permission. His informative articles on safe riding techniques have been featured in several recent issues. He has been an active motorcyclist for more than 20 years. For the past 2½ years he has served as an instructor in the Motorcycle Safety Foundation's Advanced Riding Course at California's Saddleback College. He is currently gathering information for a Doctorate in Motorcycle Safety Education.

and there were parked cars to the right. There was just no place to go so I laid it down." I'm sure you can think of other situations.

You've probably noticed that in these three examples I did not follow the dialogue through to a logical conclusion, i.e., crash or survival. In all three hypothetical cases it is entirely possible that the motorcycle rider missed the offending car and survived. However, if he *did* miss the cars it was not of his doing! The moment he laid his motorcycle down, he exercised his final option in controlling the destiny of himself and his motorcycle. Once the bike was on its side, there was no way he could have done anything else except passively ride the skid out.

Consider: When the machine is laid on its side, what is striking the road surface? The metal of the engine, the safety bars and the like. Think about how easily this metal will slide along the roadway. You've virtually converted your machine into a sled with metal runners. More importantly you have no control over this sled once it has been placed in motion. You can't make it stop, you can't turn it – in most cases you can't even get away from it!

continued

Figure 1

TABLE OF STOPPING DISTANCES

Miles Per Hour	60	55	50	45	40	35	30	25	20	15	10	5	0
Stopping Distance at Speed	171	144	119	96	76	51	42	30	19	11	5	1	0
Difference in Stopping Distance between Speeds		27	25	23	20	18	16	12	11	8	6	4	1

Data reflects the formula: Stopping distance = V^2 divided by 30 μ, where V is the velocity of the vehicle in miles per hour; 30 is a constant; μ is the coefficient of friction of the roadway in percent (0.7 is the coefficient of friction for an average roadway surface.)

So what do you gain from "laying it down?" Not much! If you're attempting to avoid an object would you rather approach this object on an uncontrollable sled with metal runners, or in a fashion where some degree of control can be exercised? I believe the rider in our dialogue would have had a much better chance of surviving the three critical situations if he had not lain his motorcycle down. As a matter of fact, I do not believe it is *ever* advisable to lay a motorcycle down deliberately in order to avoid an impact.

What is the alternative? Leave that machine on its feet! Your tires and your brakes are designed to stop the machine . . . and they do it rather effectively if used properly and without panic. (It may serve to speculate here that the concept and practice of laying a motorcycle down seems to have originated many years ago when motorcycle brakes were far more inefficient than today's modern disc units. The idea may have survived because of outdated advice, reinforced by the number of accidental lay-downs which have been elevated to the status of "intentional acts" long after the incident. The fact is that brakes – these days – are better than sleds!)

Now that we've opted for using the brakes in critical stopping situations a few words about braking and braking distance are in order. Using the formula and data in Fig. 1, we see that stopping distance equals velocity (squared) divided by 30 times the coefficient of friction. You can determine stopping distances at different speeds under emergency, locked-wheel situations.

At 60 miles per hour it will take you 171 feet to stop your vehicle; at 55 mph it will take you 144 feet to stop, and so on. The interesting thing to note about the data in this table is the stopping distances *between* different speeds. It will take 27 feet to reduce your speed from 60 mph to 55 mph,

The full-lock braking sequence was set up to simulate an emergency stop under controlled conditions. Author Robert Nichols began the braking action at the measured 30 feet from the "left-turning" vehicle. Speed of the motorcycle at the beginning of the braking action was between 30 and 32 miles per hour. The simulation gains time/distance perspective when it is explained that the series was filmed with a motor-driven Canon AE-1 operating at approximately two frames per second at 1/1000. The sequence was photographed by Bob Livesay. The techniques employed by rider Nichols are explained in the text.

25 feet to go from 55 to 50 mph, 23 feet from 50 mph to 45 mph, and so on. Now look what happens to your stopping distances between different speeds as the speeds diminish! Whereas it took 27 feet to reduce your speed from 60 mph to 55 mph, it takes only eight feet to reduce the speed from 20 mph to 15 mph – the same five mph reduction in speed. So you can see that IF YOU STAY ON YOUR BRAKES and don't panic, you will stop faster as the speed diminishes.

This fact becomes extremely important if you realize that you don't have to come to a complete stop to survive a crash! If you can reduce your forward speed to approximately 15 miles per hour or lower, your chances of survival are very high. Yes, you may go bounding up against something and receive minor injuries, but existing evidence points to the fact that the vital portions of your body – excluding the head – can survive a direct impact of up to 15 miles per hour. Anything above this speed is generally fatal. (Somewhere in here there's a good reason for wearing a helmet. A 15-mile-per-hour impact against that critical orb might just be too much.)

There is another aspect to critical impending crash situations, and that is your reaction time. It takes you approximately ¾ of a second to react to a critical situation. If you translate this into distance traveled it will take you 1.1 times the speed you're traveling to apply any emergency action. If you're traveling 30 mph you will go 33 feet (1.1 X 30 mph) between the time you are aware of the situation and the time you take any action. So not only must you consider your stopping distance, you must consider your reaction time as well.

In the Motorcycle Safety Program at Saddleback College we like to print one underlying concept indelibly on the minds of our students. That concept is ANTICIPATION! Know where critical situations may arise and *anticipate* what could happen. Take for instance intersections. Statistics show that most accidents occur at intersections. Anticipate this and act accordingly. Slow down *before* approaching any critical situations. There is no better way to "decrease" your reaction time.

At this point still another factor enters the picture: the rider's trust in the emergency braking method and his ability to perform the technique. Tell you what you do. Consult the stopping

continued

distance table. At 20 miles per hour the table indicates that it will take you 19 feet to stop. Now go outside and measure off 19 feet from a wall. That's not much distance is it? Now stand at that 19-foot mark and imagine yourself traveling towards the wall at 20 miles per hour. Will you have enough confidence to hold onto those brakes even knowing full well you *can* stop before you go smack?

The point is that this idea of staying on the brakes may require some behavioral changes on your part. It is one thing to understand and accept a theory intellectually. It is quite another to internalize that theory to a point where you have confidence in it. There is only one way to make this happen.

Practice.

Only by performing a technique repeatedly until it is an ingrained procedure can it become a useable skill. But before you head for your favorite parking lot, let's examine what actually happens during a full-lock stop, and some of the things that make it happen. Knowing what to expect when you are placed in an emergency situation is more than half the battle.

In order to stop your bike in the least possible distance, the front brakes must be used. As a matter of fact, 70 percent of the braking comes from the front brake. As we will see in a moment, you may lock up your rear brake on a motorcycle without losing control, but generally speaking the front brake is *not* locked up – even in an emergency situation. Contrary to what this would seem to indicate, this property of the front brake will actually stop the motorcycle in a shorter distance than the table indicates. The reason for this is that maximum braking force is achieved just *prior* to locked wheel stopping. As a result there is a safety margin built into the data in the stopping distance table, since the stopping distances given – and the formula on which they are based – are a reflection of locked wheel stopping. (But don't try to use that advantage in your emergency stops. Let it remain a safety margin.)

As a matter of fact, the major danger in using the front brakes in an emergency is that there are circumstances in which they *can* be locked up. If this should occur, you will lose forward steerage, the bike will buckle and you will go down unless you release those front brakes immediately.

On motorcycles which have a drum-type front brake, the front brake often can be adjusted at the handlebars to prevent front brake lock-up. But most road machines these days feature self-adjusting hydraulic actuated braking systems. Self-adjusting brakes are not supposed to lock – so they tell us – and under most circumstances they won't. But how about that exception where you are operating your machine in hot weather and the fluid in the forward braking system has expanded to a point where there is no free-play in the

lever? If an emergency arises and you white-knuckle that front brake lever, you might wind up with twice the braking power and throw yourself into a front-wheel skid. Similarly, while applying normal front braking, you could hit some loose sand, gravel or oil on the roadway and the corresponding change in the coefficient of friction between the front tire and the roadway might cause a skid.

So what do you do in that emergency stopping situation? One thing you can do besides adjusting your brakes is practice a useful technique developed in the Motorcycle Safety Program at Saddleback College. Basically the technique consists of squeezing the forward brake lever with maximum pressure, releasing that pressure for a brief fraction of a second, then squeezing again. For illustration, let's assign the maximum braking pressure you can apply to the front braking lever the number 10, and no pressure zero. (Half pressure would be a number 5.) Do you have the picture? Now up pops an object in front of you. There is no way to avoid this object and you begin emergency braking. You would squeeze the forward brake lever to an 8 or 9, release it to a 6 or 7 – and repeat this variation of pressure on the front brake lever until you have come to a safe stop. We like to call this "playing the brake," and it is most effective. This technique should be practiced – until in the event of an emergency situation you will "play the brake" as a normal course, thereby achieving maximum braking force while virtually eliminating the possibility of locking the front brake.

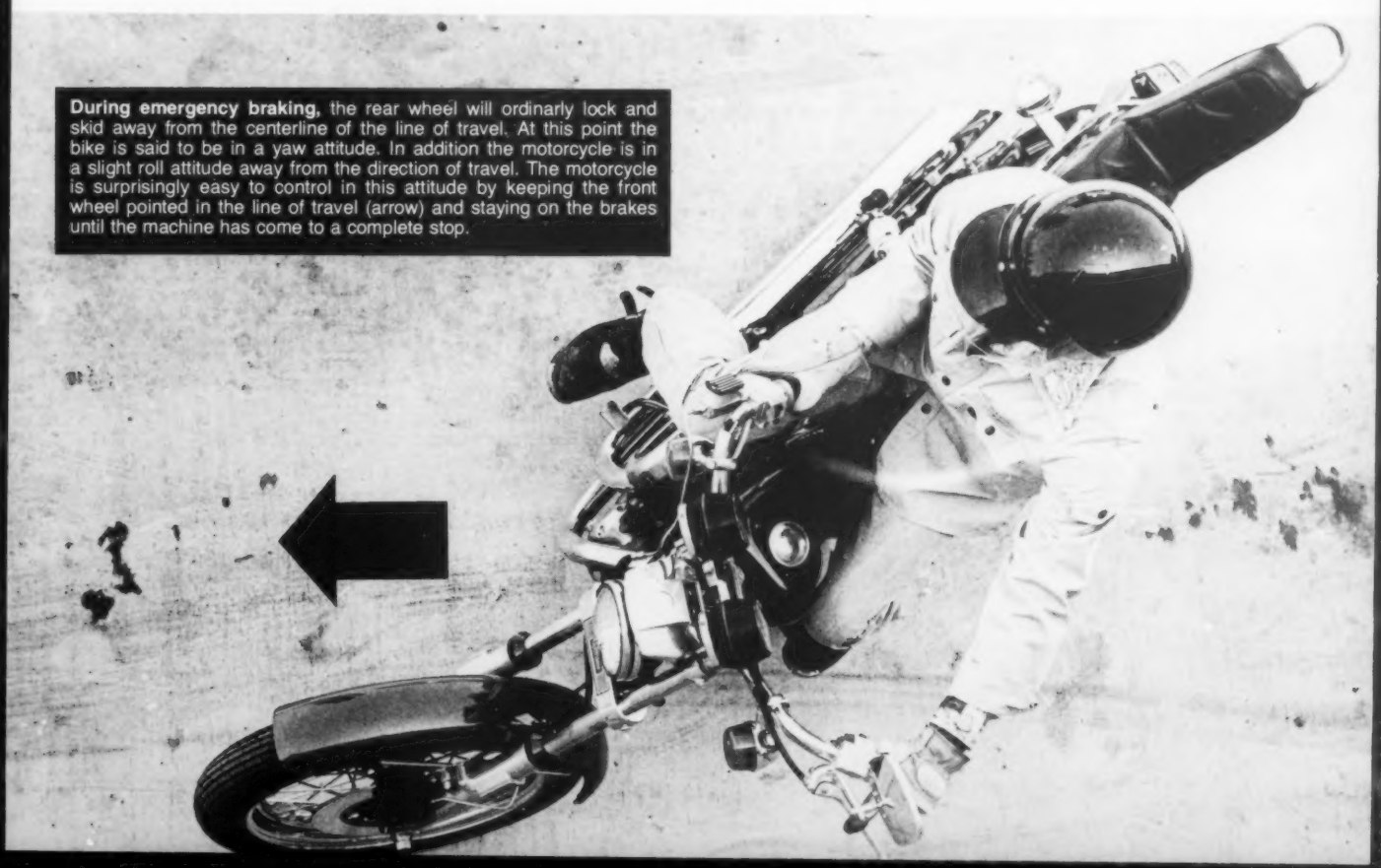
Basically front-wheel braking is a question of applying maximum braking force to the wheel via the front brake, and maintaining a straight line of travel. The rear wheel, however, exhibits a considerably different set of actions during an emergency stop.

As it travels along a given course, the motorcycle's position relative to the horizontal and vertical planes is called its attitude. As you ride down the road making left and right turns, the motorcycle is placed in leaning-to-the-left and leaning-to-the-right attitudes. Said another way, the bike is "rolling" to the left and "rolling" to the right as the turns are made. Not surprisingly this process is referred to as the motorcycle's "roll attitude."

Although you ordinarily will not call upon your machine to rise or descend vertically (unless you encounter a rather large, deep crevice), the motorcycle *can* operate to some degree in the vertical plane. Even though the elevation attained is limited by the length of the bike, the motorcycle certainly can "pitch" upwards during a wheely – and this "pitch attitude" is also experienced to a minor degree during hard braking when the front forks are depressed and the motorcycle pitches forward.

The third positional attitude is called "yaw." The motorcycle shares this particular attitude with its distant relative the automobile. If you've ever undergone the hair-raising experience of being in an automobile which was in a locked wheel skid you will be able to visualize the yaw attitude. When this happens the vehicle is propelled along a straight line of travel, while the rear end "yaws" to the left and right of this straight line – with steerage being maintained by turning the front wheels of the automobile into the yaw along a line equal or parallel to the straight line of travel. In a locked-wheel braking situation, the motorcycle will act in the same manner.

continued



During emergency braking, the rear wheel will ordinarily lock and skid away from the centerline of the line of travel. At this point the bike is said to be in a yaw attitude. In addition the motorcycle is in a slight roll attitude away from the direction of travel. The motorcycle is surprisingly easy to control in this attitude by keeping the front wheel pointed in the line of travel (arrow) and staying on the brakes until the machine has come to a complete stop.

To understand why, I'm going to touch lightly on some physical laws first brought forth by Newton in his laws of motion. (Relax, it won't hurt much.)

As a motorcycle travels in a straight line, it exhibits – among other things – a tendency to *maintain* that forward motion along a straight line. As long as you perpetuate this forward motion with the throttle and the clutch, the machine will travel in the straight line unless some *outside* force causes its direction to change. This outside force may be provided by the friction of the side of the tire as the motorcycle is caused to lean and turn, or by the inertial force which results in a rear-wheel skid into the yaw attitude. As long as the forward force exceeds the outside force (e.g., friction of the rear tire striking the roadway in a yaw attitude) the machine will continue to mush forward along the straight line of travel – on the side of the tire!

(You may also have the idea if your motorcycle does go down you can push away from it and get out of harm's way. Not true! Newton again. You have the same inertial force imparted to you as does the motorcycle and you will tend to travel along the same general track as the fallen bike – another argument for staying upright and on the brakes rather than bailing out or laying it down.)

Of the three attitudinal positions – roll, pitch and yaw – yaw has the greatest significance when it comes to an emergency braking situation on a motorcycle. As a matter of fact it is the very act of locking up the rear brake which throws the bike into a yaw.

The underlying cause of the attitude shift of the motorcycle resulting in the yaw is the weight shift of the rider when he applies pressure to the rear brake lever. As the rider pushes down on the rear brake lever, his body is forced to the left of the motorcycle's centerline, creating a left yaw. As the rider steers toward the line of travel, the motorcycle's attitude will tend to change from a left yaw to a right yaw. This oscillation to the left and to the right will continue until the motorcycle comes to a complete stop. (The frequency of the oscillation and its intensity are governed by a host of variables: speed, surface conditions, etc.)

With practice under controlled conditions, this yawing motion of the motorcycle becomes surprisingly easy to learn to control. However at this point I must raise a very large yellow caution flag!

We have seen that during a yaw the motorcycle will be at an angle to the line of travel. Also during this time the machine will be in a slight roll attitude, leaning away from the line of travel. As long as the rear wheel is locked up and skidding in the yaw attitude, the bike can be controlled. However, *if you release the pressure on the rear brake pedal, allowing the rear wheel to turn even a few inches while the machine is at a yaw and roll angle away from absolute centerline of the line of travel, the machine will almost invariably flip in the direction of the line of travel, sending you and your motorcycle into a tumbling motion toward the object you are trying to avoid!* Not a pretty picture is it? The phenomenon is referred to as "high-siding" and it can only be avoided in a locked-wheel situation only by keeping those rear brakes locked up until you have come to an absolute stop.

Placing everything we've discussed into perspective, the total emergency braking procedure looks like this: Once you have committed your bike and yourself to an emergency locked-wheel braking situation, you will stay on the brakes as long as the bike continues to move. Your rear brake is locked up and your bike is yawing to the left and right of the line of travel. At the same time you are "playing" the front brake while steering the front wheel along a course equal to or parallel to the line of travel. If you continue this action you will bring the machine to a stop, hopefully before you strike the object you're braking for. At the very worst, your intention is to strike the object at a speed below the 15-mile-per-hour critical speed discussed earlier.

Now comes the hard part. Be advised that in order to carry this off successfully you MUST NOT PANIC! I know this is easier said than done. But practice, of both physical skills and mental anticipation, will help immeasurably. You should test your ability to stop at different speeds in trial situations. Set up a measured course in a remote parking lot and go over the procedures. It's surprising how quickly you can develop an understanding of speeds and stopping distances. Above all, if the real situation should arise – and it will – you will have confidence in your ability to stop short of utter disaster.

We all panic at some point. However, that point is very closely related to experience. I believe that if you know the facts – and have gained familiarity with the proper techniques through practice – that panic point can be diminished to the extent that you can retain control in an emergency braking situation and ride away from the critical situation safely.

Before we leave emergency brak-

ing let me bring up one more area where extreme caution should be exercised during an impending crash; that is, in turns. If you enter into emergency braking while in a turn, your machine will cease to travel the arc of the turn; instead, it will go into straight-line travel. Remember, emergency braking is locked-wheel braking and once you've committed your machine to this situation you *must* remain on the brakes until the machine has come to a complete stop. The only alternative is to release the brakes and what happens then? You and your machine may be catapulted along the straight line of travel in a very unhealthy manner called a highside. So even in a cornering situation *if* you commit yourself to locked-wheel skidding in a turn, stay on those brakes. You stand a much better chance to retain control of your machine even though you may go over the curb onto someone's lawn or into the bushes.

Of course the key to safely negotiating a curve is to reduce your speed prior to entering the curve, take the turn from the high side of the curve to the low side of the curve, keep your eyes well up and into the turn and remember if you apply any braking the motorcycle will tend to right itself toward a straight line of travel.

If the braking action in the corner does *not* result in the rear wheel locking up, you can release the brakes while continuing around the arc of the curve even though you must compensate for the tendency of the motorcycle to straighten up and go into straight-line travel by turning harder into the turn. Practice your braking techniques in the corners.

Remember: emergency braking differs only in degree from normal braking. If the braking function does *not* result in the rear wheel locking up and skidding into a yaw attitude, you can release the rear brakes without highsiding. If, however, it is an emergency locked rear wheel situation you've committed yourself to – there is no option. You must stay on the brakes until the bike comes to a stop. With practice it becomes a valuable, life-saving technique.

This article has emphasized the use of brakes and critical anticipation as ways of avoiding crashes. However a reminder may be in order here: Your motorcycle is a very maneuverable machine. By all means, whenever possible, maneuver around harm's way. If you ride with your eyes up, anticipating traffic, you will generally have sufficient time to avoid most critical impact situations. In the case of the rare exception where emergency braking is your only alternative; be prepared, then do it the right way . . . the safe way.

(Road Rider *Magazine is available by subscription only. If you wish to know more about* Road Rider, *write to them at P.O. Box 678, South Laguna, CA 92677.*

LETTERS TO THE EDITOR

BACKFIRE

REQUEST FOR ARTICLE

I would like to take this opportunity to tell you the pleasure I receive from reading DRIVER Magazine and for placing into action the directions and advice that are frequently contained therein. I particularly enjoy the section entitled "Backyard Mechanic."

I would like to request that you consider publication in some future issue of the "Backyard Mechanic" guidance/instructions for the conduct of an electric check of the ignition system and the starting system of an automobile. The objective would be a step-by-step procedure and the identification of the type of instruments to be used. I personally am interested in such checks in General Motors cars. I believe you will agree that many times motorists encounter electrical failures in one of the two systems which could be remedied with reasonable ease if the motorist were familiar with system check-points and their implications.

Thank you very much for the past issues of DRIVER Magazine and, hopefully, for a future issue in which the above-requested system checks will be discussed.

Rear Admiral John M. DeLargy, USN
2219 Windsor Road
Alexandria, VA 22307

Thank you for your kind words about DRIVER. Your request has been taken under consideration and articles will appear in the October and November issues of DRIVER's "Backyard Mechanic."

IGNITION SYSTEMS

This is in reference to your article on ignition systems in the Mar '77 issue of DRIVER.

We feel, as do some of our distributors, that your article was not quite accurate when it came to using a CDI System on the late-model cars with factory-installed electronic ignition.

A variable spark capacitive discharge ignition system such as our Mark Ten "B" or "C" will operate very satisfactorily and is easily installed on Ford and Chrysler products. Just connect the Mark Ten "B" or "C" unit to the coil stud as per instructions. In the case of Chrysler products, regap the spark plugs to .045 to .050. This combination should result in a smooth-running vehicle for some 40,000 to 50,000 miles without so much as a spark plug change. With GM's HEI System, the installation is somewhat complex, but here again, extended spark plug life can result.

This was the first edition of DRIVER that I have had the pleasure of reading. I would assume that it is a very popular magazine, one that is probably read by many and then saved for reference.

Keep up the good work.

Mr. Kenneth D. Braa
Delta Products
630 South 7th Street
Grand Junction, CO 81501

Owners of 1976, '77 and '78 autos who add aftermarket ignition systems are cautioned that, in some cases, dealers may not honor engine warranty claims. Check with your particular dealer before proceeding with a CDI or transistor installation.

"THE OVERHEATED ENGINE"

Regarding your article on page 17 of the July '77 DRIVER titled "The Overheated Engine," I offer the following comments, which is how I believe I would cope with the problem:

1. First, turn off the air conditioning to relieve the motor of this extra load.

2. If "idling along in traffic" and cannot clear the roadway, shift into neutral at every opportunity and increase engine speed to the equivalent of a fast idle. This might resolve the problem, in which event the air conditioner could possibly be used intermittently.

3. If possible to clear the roadway, park and leave the engine running, as stopping it will increase the temperature of the system. Open the hood to help dissipate the heat. If the fan is turning, increase idle speed to increase air flow and, as you stated, and if available, flow water on the *front* of the radiator, keeping the engine at fast idle. If the fan is *not* turning, shut down the engine and wait it out.

4. Removing the radiator cap can be tricky business and I would normally not remove it until there is every assurance the engine and radiator are well below their normal operating temperature and then only if there is reason to believe the coolant is low. Since radiators are a pressurized system, the boiling point of the coolant is higher when confined under pressure. An overheated radiator may not be boiling while under pressure but can instantly turn into a boiling geyser of hot water and steam when the pressure is released. This can result in severe burns and considerable loss of coolant, thereby adding to the problem.

Please recognize the foregoing as constructive comments and certainly not as intended as criticism. I find your publication to be informative, well written, and an asset in the never-ending problem of trying to minimize injury-producing accidents. Your editorial, "Risk Taking," is just beautiful. Keep up the good work!

Mr. N. M. Salsman
Safety Manager
Marine Corps Recuit Depot
San Diego, CA 92140

Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

TIMELY TOPICS

METRIC SPEED LIMITS COMING

Next year speed signs on the nation's roads will be converted to the metric system. There is no plan to print both metric and English figures on signs to ease familiarization. Instead of 40 mph, for example, a sign will read 64 kph (kilometers per hour).

Drivers may be able to go slightly faster, because the conversion may be done to the nearest easily recognizable number. The national 55 mph speed limit translates to 88.5 kph. The proposal is to make this 90 kph.

The changeover is to apply to every highway, road and city street in the country. Under the Metric Conversion Act of 1975, the Federal Highway Administration can order the conversion even on roadways which receive no federal aid. Under the plan, the conversion of all speed limit signs is to take place in a 90-day period starting 1 July 1978, and ending 30 September 1978. Auto makers will install metric speedometers in new cars. Speedometers in old models can be changed with a simple paste-on label.

Milepost and guide signs, such as those designating distances to cities, will be converted by September 1982.

WEAR BARS

If you see smooth, narrow bands running across the face of your automobile tires, it means the tread groove depth is worn to 1/16 of an inch and it's time to replace your tires. Treadwear indicators, often called "wear bars," serve as a warning to motorists when tires are worn to the danger point.

RECALLS OF TIRES

Dunlop Tire & Rubber Corp. of Buffalo, NY, announced recall of 658 size HR78-14 Dunlop Gold Seal & Remington Cushion-Aire belted radial tires carrying Transportation Dept. serial numbers DBMCA 18366 and DBMCE22366, respectively. Tires are being recalled because of a defect that could result in tire or belt separation at sustained high speed. Tire may thump and vibrate and, if not heeded, may cause sudden loss of air that could result in an accident. Known owners are being notified by mail. Other owners should return tires as soon as possible to the nearest Dunlop or Remington sales outlet where they will be replaced free of charge until 31 December. After that, normal prorated adjustment charges will apply.

Goodyear Tire & Rubber Co. of Akron, OH 44316 announced recall of 150 Goodyear FR78-14 custom tread steel belted radial tires with the following identification: MFL8DWT446, press number B18R or B18L. Because the tires received a shorter cure than specified, tires may show abnormally fast and/or irregular treadwear in service. Under extreme service conditions tire failures and vehicle crash could occur. What to do: Return tires to dealer for replacement.

A NEW ID FOR CARS

Completely theft-proofing your car is as easy as walking on eggs without breaking them. You can't do it. But you may be able to toughen the shell against thieves by subscribing to a new system of identification in which a registered number is etched into your car windows.

According to the Identicar Corp. of America (Watertown, Mass.), developers of the concept, this could turn away many car crooks, who'd have to replace all the glass to get cold cash for a hot car. If the car-jacker is just looking for a joy ride, though, the coding is no deterrent. In Australia, where the system was introduced in '68, the Identicar people claim that no registered car has been stolen. And in London, where a few Identicar-coded cars were taken, they were reportedly recovered through the numbering within days. In the last year, the idea has made its way to the Colonies.

Primarily available through new-car dealers for $20 to $50 plus an $8 registry fee, the system labels your windows in minutes. Any other part of your car, including the engine, a CB or tape deck, also may be coded. Your car doesn't have to be new to undergo the procedure; it merely needs the usual set of windshield and windows to qualify.

Once your vehicle's been imprinted with an individual identifying number, you get a duplicate card that's filed with Identicar's central registry and made available to law-enforcement agencies throughout the country. *(Dick Barnett, Mechanix Illustrated.)*

DOT WARNS OF PROBLEM WITH HONDA MOTORCYCLE BRAKES

The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) warns owners of 1975 and 1976 Honda motorcycles, models GL 1000 and CB 750F, that their motorcycle brakes may fail while operating in the rain. This problem may be severe and it has opened a formal defect investigation into the matter.

The federal safety agency said it has no reports of collisions or injuries, but it has been notified by Honda that the company has received 183 customer complaints on the brake problem. The NHTSA estimated the number of these vehicles on the highway at 75,000.

Owner reports indicate a loss of initial braking force upon each brake application during continued operation in the rain. The problem, the agency said, is caused by water soaking the disc brake pads on both front and rear wheels.

The government noted that only owners of Honda motorcycles equipped with both front and rear wheel disc brakes have complained of brake failures.

The NHTSA urged Honda motorcycle owners who have experienced braking problems to have their vehicles checked immediately. To assist the government in its investigation, the safety agency asked motorcycle owners to report any brake failures.

Information should include the year and model of the motorcycle, its serial number, a description of the problem, and whether an accident, injury, or other hazardous situation developed. Reports should be sent to:

Office of Consumer Services, N40-41, National Highway Traffic Safety Admin., 400 Seventh Street, SW, Washington, DC 20590

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motocrossCAT

Tony Bell/Cycle News

THE HEAT
MOAN-HOT WEATHER AGAIN!
SURE CAN GET TO YOU!
YOU KNOW, SUN STROKE CAN KILL YOU!
DRINK LOTS OF LIQUIDS - BUT NOT TOO MANY BEERS - BAD FOR YOU!
A HAT, SALT PILLS, AND A COLD WET TOWEL WILL HELP A LOT!
A SHADE TENT IS A GREAT IDEA! LOOK AT THIS LITTLE JEWEL I JUST BOUGHT!
A BIT OF PRACTICE AND THEN I'LL REST UP FOR MY FIRST MOTO!
OOPS! LOOKS LIKE THE INN IS FULL!